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Notice of Allowability

Application No.

10/802,015

Examiner

Dean O. Takaoka

Applicant(s)

KHORRAM ET AL.

Art Unit

2817

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Applicant's amendment dated July 6, 2006.
2. ☒ The allowed claim(s) is/are 1,3-6 and 8-10.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date <u>8/8/06</u> . |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Bruce E. Struckman on August 8, 2006.

Amend claims 1 and 6.

1. (currently amended) A tuned transformer balun circuit comprises:
a transformer balun having a single-ended winding and a differential winding, wherein the single-ended winding includes a first node and a second node and the differential winding includes a first node, a center node, and a second node;
a first tuning capacitor having a first plate and a second plate, wherein the first plate of the first tuning capacitor is coupled to the first node of the differential winding and the second plate of the first tuning capacitor is connected directly to a circuit ground;
a second tuning capacitor having a first plate and a second plate, wherein the first plate of the tuning capacitor is coupled to the second node of the differential winding and the second plate of the second tuning capacitor is connected directly to a circuit ground;
a third tuning capacitor having a first plate and a second plate, wherein the first plate of the third tuning capacitor is coupled to the first node of the single-end winding and the second plate of the third tuning capacitor is coupled to transceiver radio frequency signals, wherein based on loading of the single-ended winding and the differential

winding, the first, second, and third tuning capacitors resonate with the transformer balun; and

a decoupling capacitor having a first plate and a second plate, wherein the first plate of the decoupling capacitor is coupled to the second node of the single-ended winding and to the center node of the differential winding and the second plate of the decoupling capacitor is coupled to the circuit ground to provide a low impedance AC ground connection over a range of frequencies.

6. (currently amended) A radio frequency integrated circuit (RFIC) comprises:

a receiver section operably coupled to convert inbound radio frequency (RF) signals into inbound data;

a transmitter section operably coupled to convert outbound data into outbound RF signals; and

a tuned transformer balun circuit operably coupled to provide the inbound RF signals from an antenna to the receiver section and to provide the outbound RF signals to the antenna, wherein the tuned transformer balun circuit includes:

a transformer balun having a single-ended winding and a differential winding, wherein the single-ended winding includes a first node and a second node and the differential winding includes a first node, a center node, and a second node;

a first tuning capacitor having a first plate and a second plate, wherein the first plate of the first tuning capacitor is coupled to the first node of the differential winding and the second plate of the first tuning capacitor is connected directly to a circuit ground;

a second tuning capacitor having a first plate and a second plate, wherein the first plate of the tuning capacitor is coupled to the second node of the differential winding and the second plate of the second tuning capacitor is connected directly to a circuit ground;
a third tuning capacitor having a first plate and a second plate, wherein the first plate of the third tuning capacitor is coupled to the first node of the single-end winding and the second plate of the third tuning capacitor is coupled to transceiver radio frequency signals, wherein based on loading of the single-ended winding and the differential winding, the first, second, and third tuning capacitors resonate with the transformer balun; and

a decoupling capacitor having a first plate and a second plate, wherein the first plate of the decoupling capacitor is coupled to the second node of the single-ended winding and to the center node of the differential winding and the second plate of the decoupling capacitor is coupled to the circuit ground to provide a low impedance AC ground connection over a range of frequencies.

Allowable Subject Matter

Claims 1, 3 – 6 and 8 – 10 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Rofougaran et al shows first thru fifth capacitors (C1 – C5 – Figs. 3, 4) but does not show the first and second tuning capacitors directly connected to ground where C1 and C2 and connected to ground thru FETs T3, T4 and inductors L3, L4, thus not directly connected.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dean O. Takaoka whose telephone number is (571) 272-1772. The examiner can normally be reached on 8:30a - 5:00p Mon - Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (571) 272-1769. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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August 8, 2006